



STATE OF WASHINGTON  
**STATE BUILDING CODE COUNCIL**

May 2018  
Log No. \_\_\_\_\_

**1. State Building Code to be Amended:**

- International Building Code
- ICC ANSI A117.1 Accessibility Code
- International Existing Building Code
- International Residential Code
- International Fire Code
- Uniform Plumbing Code

- International Mechanical Code
- International Fuel Gas Code
- NFPA 54 National Fuel Gas Code
- NFPA 58 Liquefied Petroleum Gas Code
- Wildland Urban Interface Code

For the Washington State Energy Code, please see specialized [energy code forms](#)

**Section(s):** **IEBC** 503.19, 805.5  
(e.g.: Section: R403.2)

**Title:** Seismic requirements for alteration of URM or hollow clay tile buildings increasing occupant load.  
(e.g: Footings for wood foundations)

**2. Proponent Name (Specific local government, organization or individual):**

**Proponent:** Washington Association of Building Officials Technical Code Development Committee  
**Title:** N/A  
**Date:** April 8, 2022

**3. Designated Contact Person:**

**Name:** Sue Coffman/Hoyt Jeter  
**Title:** City of Tacoma Building Official  
**Address:** 747 Market St., Room 345, Tacoma, WA 98402

**Office Phone:** Sue Coffman (253) 594-7905/ Hoyt Jeter: (253) 254-1924  
**Cell:** Sue Coffman (253) 507-6360/ Hoyt Jeter: (206) 356-7790  
**E-Mail address:** [scoffman@cityoftacoma.org](mailto:scoffman@cityoftacoma.org)/ [hjeter@cityoftacoma.org](mailto:hjeter@cityoftacoma.org)

**4. Proposed Code Amendment.** Reproduce the section to be amended by underlining all added language, striking through all deleted language. Insert new sections in the appropriate place in the code in order to continue the established numbering system of the code. If more than one section is proposed for amendment or more than one page is needed for reproducing the affected section of the code, additional pages may be attached.

Clearly state if the proposal modifies an existing amendment or if a new amendment is needed. If the proposal modifies an **existing amendment**, show the modifications to the existing amendment by underlining all added language and striking through all deleted language. If a new amendment is needed, show the modifications to the **model code** by underlining all added language and striking through all deleted language.

Code(s) 2021 IEBC Section(s) 503.19, 805.5

Enforceable code language must be used.

Amend section to read as follows:

**IEBC 503.19 – Seismic Requirements for Alterations with Increased Occupant Load of Unreinforced Masonry or Hollow Clay Tile Buildings.** In addition to the requirements in IEBC 503.4 through 503.11, alterations meeting all of the following conditions shall comply with the applicable requirements in Sections 503.19.1 through 503.19.4.

1. The occupant load of a building increases by more than 20 percent for occupancy groups A, I, E, R, M, B, H, or S used for storage of hazardous materials.
2. Buildings assigned to Seismic Design Category C, D, E, or F.
3. The building's structural system includes unreinforced masonry and hollow clay tile bearing walls.

Where there is a change of occupancy with the alteration, the most restrictive seismic requirements in accordance with IEBC 506 and this section shall apply. The cumulative effect of alterations compared with the original occupant load that have an increase in occupant load over time exceeding 20 percent shall comply with these provisions.

**Exceptions:**

1. A cumulative increase in the occupant load of less than 50 for occupancy categories A or I.
2. A cumulative increase in the occupant load of less than 25 for E occupancies.
3. R-3 occupancies, and all other R occupancies with an increase of 5 dwelling or sleeping units or less.
4. A cumulative increase in occupant load of less than 100 for occupancy categories M or B.
5. A cumulative increase in the occupant load of less than 10 for H occupancies or S occupancies using hazardous materials.

**IEBC 503.19.1 – Large Buildings**

Buildings 4 or more stories or buildings more than 12,000 square feet shall be required to perform seismic evaluation in accordance with IEBC 304.3. Any lateral resisting elements shall be required to comply with design requirements for reduced seismic forces in accordance IEBC 304.3.2 where found to be deficient.

**IEBC 503.19.2 – Parapet Bracing**

Buildings with parapets constructed of unreinforced masonry where the parapet height to thickness ratio exceeds 1.5:1 shall be required to have parapets anchored, removed or altered to resist out-of-plane seismic forces, unless an evaluation demonstrates compliance of such items. Use of reduced seismic forces in accordance with IEBC 304.3.2 shall be permitted.

**IEBC 503.19.3 – Floor and Roof Wall Anchors**

The alteration work shall include the installation of wall anchors at the floor and roof lines, unless an evaluation demonstrates compliance of existing wall anchorage. Use of reduced seismic forces in accordance with IEBC 304.3.2 shall be permitted.

**IEBC 503.19.4 – Bracing of Partitions and Nonstructural Walls**

Unreinforced masonry partitions and nonstructural walls within the alteration area and adjacent to egress paths from the alteration area shall be anchored, removed or altered to resist out-of-plane seismic forces, unless an evaluation demonstrates compliance of such items. Use of reduced seismic forces in accordance with IEBC 304.3.2 shall be permitted.

**IEBC 805.5 - Seismic Requirements for Level 2 Alterations with Increased Occupant Load of Unreinforced Masonry or Hollow Clay Tile Buildings.** In addition to the requirements in IEBC 805.3, Level 2 alterations meeting all of the following conditions shall comply with the applicable requirements in Sections 805.5.1 through 805.5.4.

1. The occupant load of a building increases by more than 20 percent for occupancy groups A, I, E, R, M, B, H, or S used for storage of hazardous materials.
2. Buildings assigned to Seismic Design Category C, D, E or F.
3. The building's structural system includes unreinforced masonry and hollow clay tile bearing walls.

Where there is a change of occupancy with the alteration, the most restrictive seismic requirements in accordance with IEBC 1006 and this section shall apply. The cumulative effect of alterations compared with the original occupant load that have an increase in occupant load over time exceeding 20 percent shall comply with these provisions.

**Exceptions:**

1. An increase in the occupant load of less than 50 for occupancy categories A or I.
2. An increase in the occupant load of less than 25 for E occupancies.
3. R-3 occupancies and all other R occupancies with an increase of 5 dwelling or sleeping units or less.
4. An increase in occupant load of less than 100 for occupancy categories M or B.
5. A cumulative increase in the occupant load of less than 10 for H occupancies or S occupancies using hazardous materials.

**IEBC 805.5.1 –Large Buildings**

Buildings 4 or more stories or buildings more than 12,000 square feet shall be required to perform seismic evaluation in accordance with IEBC 304.3. Any lateral resisting elements shall be required to comply with design requirements for reduced seismic forces in accordance IEBC 304.3. 2 where found to be deficient.

**IEBC 805.5.2 – Parapet Bracing**

Buildings with parapets constructed of unreinforced masonry where the parapet height to thickness ratio exceeds 1.5:1 shall be required to have parapets anchored, removed or altered to resist out-of-plane seismic forces, unless an evaluation demonstrates compliance of such items. Use of reduced seismic forces in accordance with IEBC 304.3.2 shall be permitted.

**IEBC 805.5.3 – Floor and Roof Wall Anchors**

The alteration shall include the installation of wall anchors at the floor and roof lines, unless an evaluation demonstrates compliance of existing wall anchorage. Use of reduced seismic forces in accordance with IEBC 304.3.2 shall be permitted.

**IEBC 805.5.4 – Bracing of Partitions and Nonstructural Walls**

Unreinforced masonry partitions and nonstructural walls within the *work area* and adjacent to egress paths from the *alteration area* shall be anchored, removed or altered to resist out-of-plane seismic forces, unless an evaluation demonstrates compliance of such items. Use of reduced seismic forces in accordance with IEBC 304.3.2 shall be permitted.

- 5. Briefly explain your proposed amendment, including the purpose, benefits and problems addressed.**  
Specifically note any impacts or benefits to business, and specify construction types, industries and services that would be affected. Finally, please note any potential impact on enforcement such as special reporting requirements or additional inspections required.

Buildings with unreinforced masonry and hollow clay in Seismic Design Category C, D, E or F represent an increased risk to life safety, and jurisdictions need to be able to require seismic upgrades where occupant loads are increased during alterations. Currently the seismic retrofits for URM or hollow clay tile buildings are triggered for the following alteration scenarios:

1. Level 3 remodel triggers parapet bracing, installation of floor/wall anchors, and wall/partition bracing within alteration area.
2. Roof replacement more than 25% triggers parapet bracing.
3. Substantial structural alteration triggering upgrading the lateral load resisting system with reduced seismic forces.
4. Change in risk category per IBC Table 1604.5.

This proposal will capture the situations where the alteration is using either the prescriptive requirements of the code or is falling under the Level 2 remodel that is not triggering any roof replacement requirements. Level 3 alterations require compliance with all Level 2 requirements, and thus must meet the large building provisions as required in that section.

Not all occupancies are included in this new proposal as it is capturing moderate to higher risk occupancies that may have more people in the building. In addition, this code proposal incorporates exceptions of small increases to occupant load that reasonably exempts small alterations that may trigger this provision due to having small number of occupants prior to the alteration. Occupant load increases over time are required to be considered in this code proposal; however,

jurisdictions may want to consider adding a local amendment requiring more specificity to the timeline of these increases and when seismic retrofits shall be triggered once cumulative occupant load increases in a building exceed the 20 percent.

By requiring seismic upgrades for parapets, wall/floor anchors, and partition walls for buildings below the substantial remodel threshold, this captures opportunities to implement seismic improvements during alterations that may not otherwise trigger any seismic improvements. Also, an additional trigger for large buildings provides an opportunity to require seismic analysis of the whole building system. Allowing for reduced seismic loads provides an opportunity to increase our state's seismic resiliency to preserve life (collapse prevention) in a larger earthquake and minimize red tags for small to medium earthquakes.

6. **Specify what criteria this proposal meets.** You may select more than one.

- The amendment is needed to address a critical life/safety need.
- The amendment clarifies the intent or application of the code.
- The amendment is needed to address a specific state policy or statute.
- The amendment is needed for consistency with state or federal regulations.
- The amendment is needed to address a unique character of the state.
- The amendment corrects errors and omissions.

7. **Is there an economic impact:**  Yes  No

If no, state reason:

If yes, provide economic impact, costs and benefits as noted below in items a – f.

For URM or HCT buildings that trigger the occupant load threshold, there will be a cost of installing seismic supports to include parapet bracing, wall/roof ties, and wall/partition bracing for nonstructural walls. These costs are estimated at \$40-\$90 per square foot. For large buildings triggering the analysis of the lateral force resisting system, there may be much larger costs such as putting in a moment frame or secondary load transfer for seismic loads. We do not have information on what that may cost as it is very dependent on the design of the specific structure.

- a. **Life Cycle Cost.** Use the OFM Life Cycle Cost [Analysis tool](#) to estimate the life cycle cost of the proposal using one or more typical examples. Reference these [Instructions](#); use these [Inputs](#). Webinars on the tool can be found [Here](#) and [Here](#)). If the tool is used, submit a copy of the excel file with your proposal submission. If preferred, you may submit an alternate life cycle cost analysis.
- b. **Construction Cost.** Provide your best estimate of the construction cost (or cost savings) of your code change proposal.

\$40-\$90/square foot

(For residential projects, also provide \$[Click here to enter text.](#)/ dwelling unit)

Show calculations here, and list sources for costs/savings, or attach backup data pages

- c. **Code Enforcement.** List any code enforcement time for additional plan review or inspections that your proposal will require, in hours per permit application:
- d. **Small Business Impact.** Describe economic impacts to small businesses:
- e. **Housing Affordability.** Describe economic impacts on housing affordability:

- f. *Other.* Describe other qualitative cost and benefits to owners, to occupants, to the public, to the environment, and to other stakeholders that have not yet been discussed:

Please send your completed proposal to: [sbcc@des.wa.gov](mailto:sbcc@des.wa.gov)

**All questions must be answered to be considered complete. Incomplete proposals will not be accepted.**